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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,609	09/21/2005	Dan Rutger Weinholt	P16408US1	9526
27045	7590	07/18/2008		
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024			EXAMINER FLORES, LEON	
			ART UNIT	PAPER NUMBER
			2611	
			MAIL DATE	DELIVERY MODE
			07/18/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/519,609	Applicant(s) WEINHOLT, DAN RUTGER	
	Examiner LEON FLORES	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 is/are allowed.
- 6) ☒ Claim(s) 4-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures (1-5) should be designated by a legend such as **--Prior Art--** because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims (1-3, 5, 8) objected to because of the following informalities:

In claim 1, lines 17 & 25, the limitation of "if" should be rewritten as "when" to preclude the claim from being indefinite.

In claim 3, line 9, the limitation of "if" should be rewritten as "when" to preclude the claim from being indefinite.

In claim 5, line 1, the limitation of "if" should be rewritten as "when" to preclude the claim from being indefinite.

In claim 8, line 1, the limitation of "if" should be rewritten as "when" to preclude the claim from being indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claims (4-8) are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee. (US Patent 5,796,786)**

Re claim 4, Lee discloses the method of demodulating digital data using M'ary QAM, comprising the steps of detecting a complex symbol vector (See fig. 8 & col. 10, lines 35-64), establishing within which reference symbol boundaries of a given symbol boundary size the detected symbol vector falls, the given reference symbol boundaries being associated with a complex reference vector (See fig. 8 & col. 10, lines 35-64), establishing quadrature components of an error vector constituting the difference between the detected vector and the associated reference vector (See fig. 8 & col. 10, lines 35-64), deriving a control error signal from the error vector, the control error signal

using a weighted error signal being a function of the derived error signal as a feed-back signal in the demodulation stage. (See fig. 8 & col. 10, line 65 – col. 11, line 7)

But the reference of Lee fails to explicitly teach that whereby the weighted error signal approaches zero for error signals R approaching zero, attains a positive value for positive values close to zero and attains a negative value for negative values close to zero, approaches zero when the error signal vector approaches the symbol boundaries of the detected symbol.

However, the reference of Lee does teach applying a weighting function to the detected phase error (See col. 10, line 65 – col. 11, line 7 & col. 9, lines 45-55 including equation 24), whereby the weighted error signal approaches zero for error signals R approaching zero ("if the error signal is zero the multiplication of the weighting function and the error signal will be zero"), attains a positive value for positive values close to zero and attains a negative value for negative values close to zero ("if the error signal is positive the multiplication of the weighting function and the error signal will be positive"), approaches zero when the error signal vector approaches the symbol boundaries of the detected symbol. (See col. 10, line 65 – col. 11, line 7)

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Lee, in the manner as claimed, for the benefit of deciding the transmitted phase.

Re claim 5, Lee further discloses that, wherein if the error signal vector exceeds the symbol boundaries, the weighted error signal attains a reduced value or a zero

value. (See fig. 6A & col. 8, lines 46-66)

Re claim 7, the reference of Lee fails to explicitly teach that wherein no weighting is performed for outer corner portions of the M'ary QAM constellation.

However, the reference of Lee does suggest (See fig. 6A & col. 8, lines 46-66) that wherein no weighting is performed for outer corner portions of the M'ary QAM constellation. ("Weighting function varies depending on the position of the detected symbol")

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Lee, in the manner as claimed, for the benefit of reducing the wrong detection of the phase error.

Re claim 8, Lee further discloses that wherein if the detected signal falls outside the symbol boundaries along the Q and I axes, the weighting function $WE=0$ is applied. (See fig. 6A & col. 8, lines 46-66)

Allowable Subject Matter

2. Claims (1-3) are allowed.
3. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Daffara. (US Patent 5,684,842)
- Berger. (US Patent 6,385,233 B1)
- Mizoguchi. (US Patent 4,859,956)
- Impallomeni et al. (US Patent 4,330,861)
- Samuelli et al. (US Patent 5,754,591)
- Ahn. (US Patent 6,826,238 B2)
- Ahn. (US Patent 6,983,028 B2)
- Ohishi. (US Patent 6,940,923 B2)

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. F./
Examiner, Art Unit 2611
July 7, 2008

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611